K-TEK

RS80/RS85

Vibrating Fork Level Switch

RS80   **RS85**

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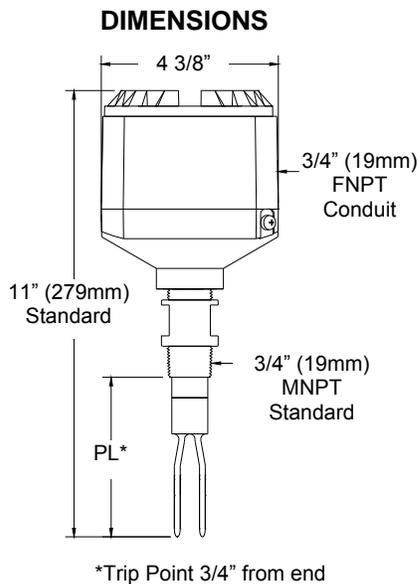# Table of Contents

1.0 Introduction

1.1 Description
The Resonator™ Switch is a vibrating fork switch designed for level detection in liquids. The robust sensor design and built-in temperature compensation ensure reliable response even in the presence of very extreme process conditions. The LED indicators of the Resonator's modular electronics allow for simple set-up and status detection via pushbuttons or a single magnet. Its rugged construction allows it to withstand the rigors of just about any industrial environment. The Resonator switch is available in two different models: (1) RS80 - base model or (2) RS85 - multi-options model.

1.2 Theory of Operation
The Resonator vibrating switch utilizes a piezoelectric driven tuning fork that exhibits a change in resonant frequency when immersed in any liquid. "Smart" microprocessor-based electronics keeps the sensor in a resonant state as it changes from dry to wet or wet to dry. The resonant frequency is continuously monitored for changes created by a wet or dry sensor and an alarm is provided via a relay. An important feature of this device is that its resonant frequency is not significantly affected by coating on the fork unless the space between the forks is bridged. The RS80/RS85's ability to identify true liquid level in viscous, coating or aerated liquid is unparalleled. The self-test option continuously checks for fault conditions such as a damaged sensor and under fault conditions displays a blinking red LED visible through the glass cover. Applications include redundant high/low liquid level and are unaffected by parameters such as specific gravity, dielectric constant or mounting position of the sensor.
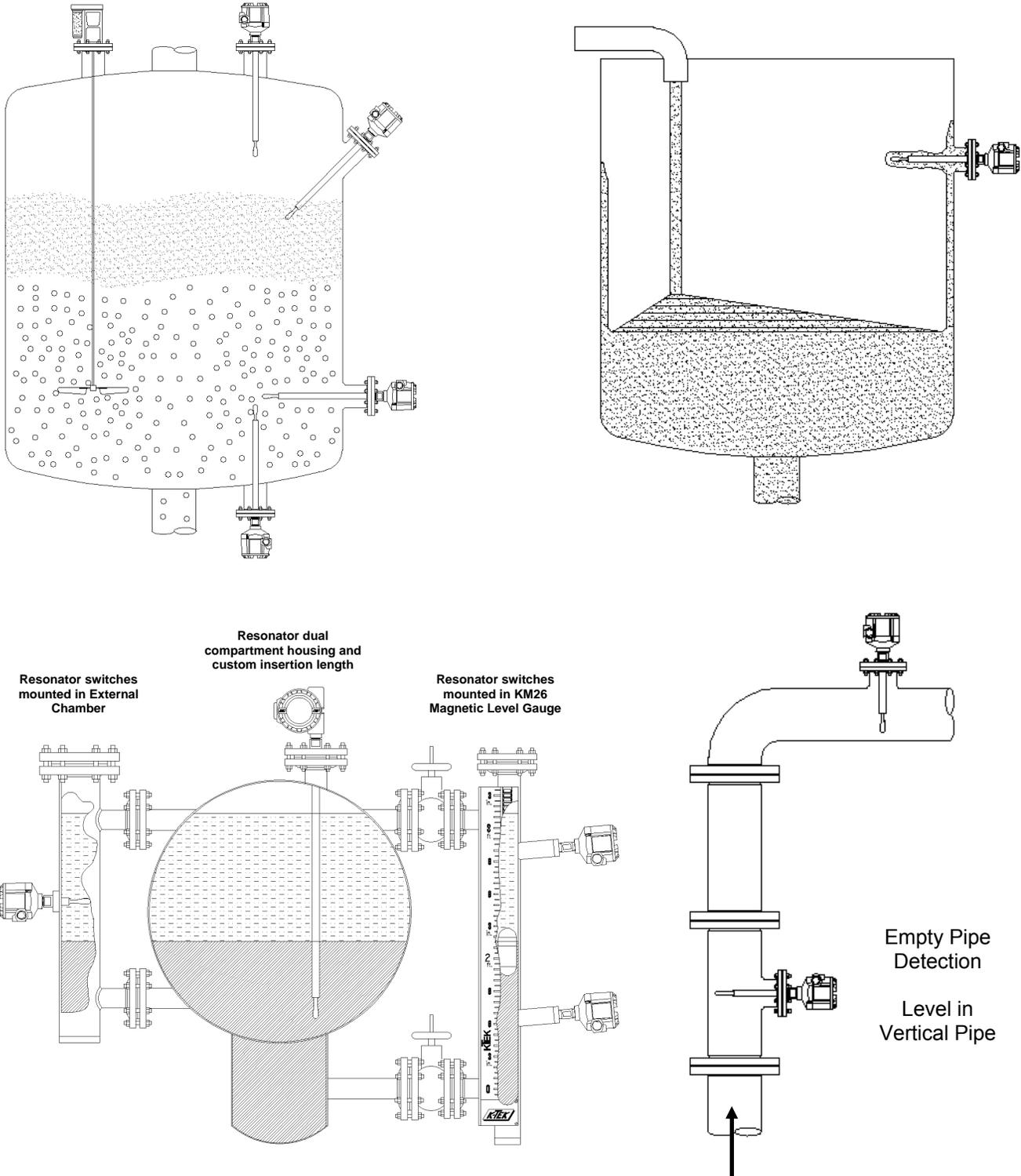
1.3 Specification
For detailed specifications consult the RS80/85 data sheet.

DIMENSIONS

4 3/8"

3/4" (19mm)
FNPT
Conduit

11" (279mm)
Standard

3/4" (19mm)
MNPT
Standard

PL*

*Trip Point 3/4" from end

1.4 Sample Applications

The Resonator™ can be used for level detection in tanks, vessels or piping containing all types of hot or cold liquids and is suitable for high/low applications in hazardous areas. The Resonator can be mounted in any orientation. In vertical applications where room allows, the unit can be extended into the vessel (up to 115") with an extension tube. The Resonator™ (RS85 only) is also available with Teflon coatings or alloy wetted parts for use in corrosive fluid and sticky applications.

Resonator dual
compartment housing and
custom insertion length

Resonator switches
mounted in External
Chamber

Resonator switches
mounted in KM26
Magnetic Level Gauge

Empty Pipe
Detection

Level in
Vertical Pipe

2.0 Installation

2.1 Mounting
After unpacking the unit, inspect it for any evidence of shipping damage. Any claims for damage due to shipping must be filed with the carrier who handled the package(s).

• Select a mounting location for the switch and the sensor probe. Your unit may be an integral mounting option or the remote mounting option. The integral mounting unit consists of a single enclosure that includes the electronic module and the sensor probe. The remote mounting unit consists of two enclosures, one containing the electronic module and the other containing the sensor probe.
• Be sure that there is sufficient clearance around the mounting position to allow for the turning radius of the switch or remote sensor enclosure as the unit is screwed into place. Allow sufficient room above the vessel entry to be able to insert the probe into the opening of the vessel.
• The thread size of the vessel coupling should be 3/4" NPT for most probes. Certain special applications may utilize couplings of different sizes.
• The information included on the label should be visible. If necessary clean the label using a cloth soaked with either water or isopropyl alcohol.

2.1.1 Flush Tank Mounting
The Resonator can be flush mounted for high or low level indication using a flange or the standard ¾" connection.

Resonator mounted via ¾" NPT connector
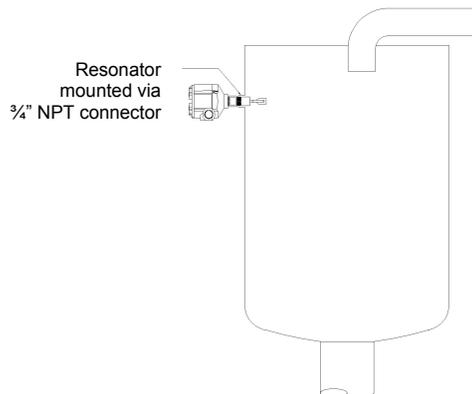
2.1.2 Switchpoint and Mounting Position
Switchpoints on the sensor depend on the mounting position. Because the Resonator requires no calibration, the switchpoint is determined by the position of the tuning fork.

Note: When used in extremely light liquids (liquefied gas), select the low density Setpoint adjustment.
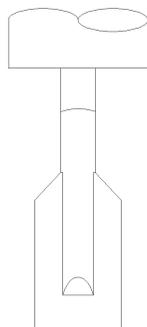
Top Mounted   Bottom Mounted   Side Mounted

2.1.3 Mounting for Vessel Wall Build-up
If there is a potential for build-up on the vessel wall, mount the Resonator with sufficient distance between the wall and the fork assembly to prevent bridging.
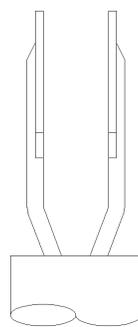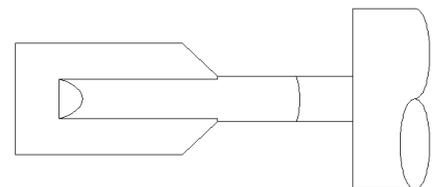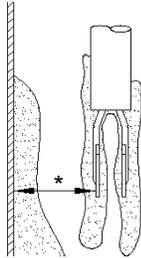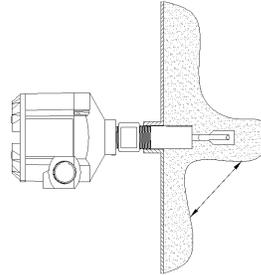

Vertical Top Mounted   Extended into Vessel, Side Mounted

* Ensure that there is sufficient distance between the build-up expected on the tank and the forks.

2.1.4 Extended Probe Lengths
The sensor length "PL" for the Resonator (model number) will differ based on the process connection. A **threaded** sensor PL is measured from the bottom process thread to the tip of the fork tine. A **flanged** sensor PL is measured from the face of the flange to the tip of the fork tine.
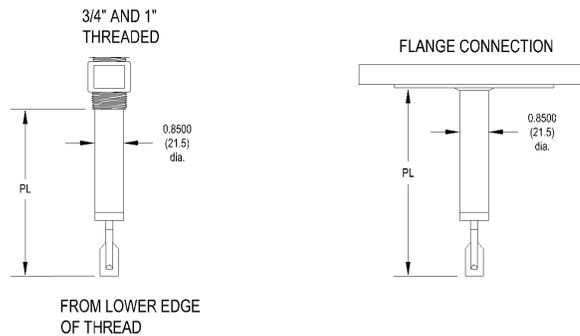
2.1.5 Mounting Position with Extension Tubes
If ordering the Resonator with an extended probe length, ensure there is adequate space between outside walls or ceilings and the vessel mounting point

A short extended probe length (up to 20 inches) can be mounted in any orientation. A Resonator with an extended probe length over 20 inches (up to 120") must be mounted vertically.
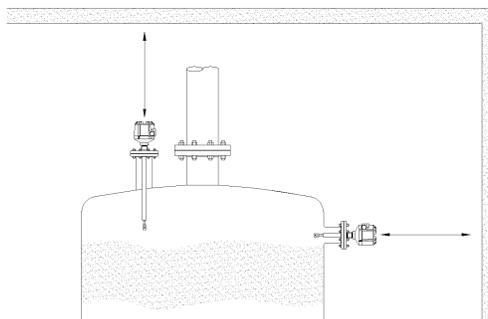
2.1.6 Mounting for High Viscosity Liquids

High viscosity liquids require proper mounting to ensure accurate, repeatable service. With high viscosities, the optimum mounting is vertical from the vessel top or horizontal (flush mounted from the side).

Note: Horizontal mounting: Position the forks so that the narrow edge of the tines are vertical. This ensures that the liquid or gelatinous process can run off easily.
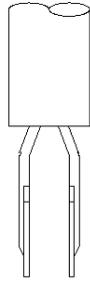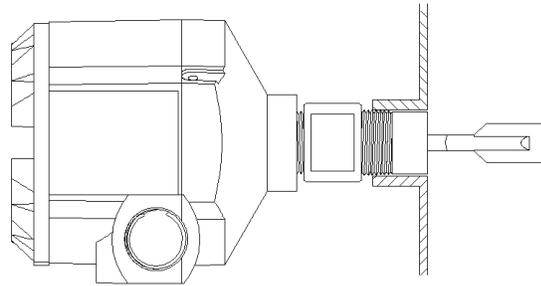
Vertical Top Mounted   Flush Side Mounted

2.1.7 Mounting for Low Viscosity Liquids

Mounting positions for low viscosity liquids are shown below. If the Resonator fork is nozzle mounted with a flange and does not extend beyond the wall of the vessel, a minimum nozzle diameter of 2" is required. If mounted into a threaded nozzle, forks should   protrude past the wall of the vessel.

MIN. 2"
(DN50)

MIN. 1"
(25)

*
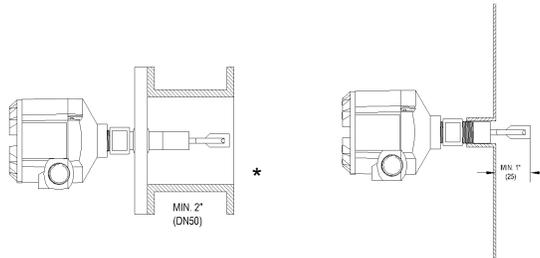
* Deburr the nozzle surfaces

2.1.8 Pipe Mounting and Empty Pipe Detection

The Resonator can be mounted into pipe lines of 2" and larger diameters. Installation into a 1" pipe line is possible using a 1" tee (1 x 3/4" reducer fitting).

Note: To avoid blockage of the flowing material, ensure narrow edge of forks is parallel with pipe walls.

To maintain optimum performance in flow or no flow applications, the liquids should have low viscosities and low flow velocities.
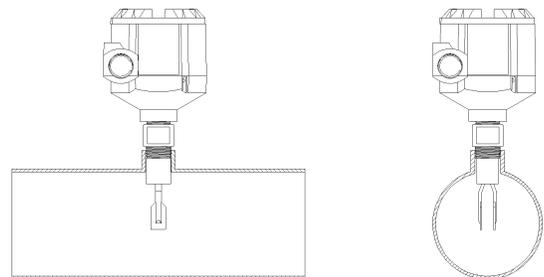
Empty Pipe Detection

CAUTION When making the opening in the vessel, observe all safety requirements of the area in which the work is being done. Be especially careful when working with pressure vessels.

The Model RS80/RS85 unit may not work properly if:
- The material viscosity is above 30,000 cps.
- There is a conductive bridge between the paddles of the fork.
- The fork tines are not in vertical position.
- There is a high turbulence level
- Probe is located near a material fill line.
- Probe is mounted improperly.

The Model RS80/RS85 unit may be damaged if:
- Temperature in the housing exceeds appropriate limits.
- The process temperature exceeds probe's operating limits.
- The electronic module is subjected to excessive vibration or shock.
- Vessel pressure exceeds process operating pressure rating of probe.
- Probe is located near a material fill line.

If any of the above statements apply to your application, do not install the switch until you contact your local representative or the K-TEK factory for further instructions.

2.2 Integral and Remote Units

Integral units
- Install the switch into the vessel coupling and connect conduit between the switch and the power supply source as required.
- Be sure the conduit is suitable for the environment in which the units are to be used.

Remote units (RS85 only)
- Install the remote sensor probe into the vessel coupling. Select a suitable location for the instrument housing that allows convenient access for calibration and meets environmental conditions of the unit.
- Connect conduit between the remote sensor housing and the instrument housing.
- Connect the RG62 type coaxial cable assembly supplied with the unit from the remote probe to the instrument input.
- Connect conduit between the switch and the supply source as required (Figure 1). Be sure the conduit is suitable for the environment in which the units are to be used.

CAUTION Due to the extremely wide range of control and/or alarm applications in which the unit may be used, it is not possible to show all conceivable wiring diagrams. Consult your representative or K-TEK factory if further assistance is needed.

2.3 Caution
Be sure that all wiring and conduit conforms to the requirements of the National Electrical Code and any enforcing authorities or agencies having jurisdiction over the installation. Be sure that any special conditions, such as hazardous area locations, are given full consideration.

- After installation and wiring, it is necessary to set-up the unit to the particular vessel and material that will be measured, using the standard calibration procedure.
- The Resonator Vibrating Switch is designed to monitor levels of liquid products with a viscosity not greater than 30,000 cps.

Figure 1
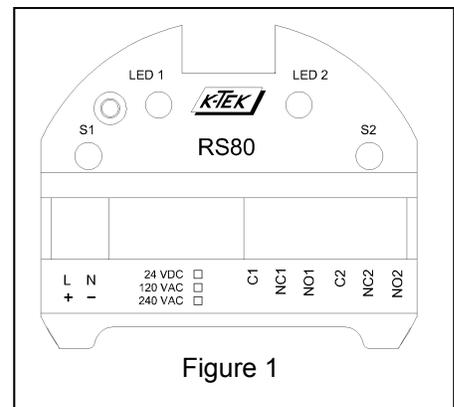
3.0 Setup

3.1 Accessing Setup Adjustments

LED 1

LED 2

S1 Pushbutton

S2 Pushbutton

Power Input

Power Requirement

Relay

Setup of the Resonator may be achieved using a (1) magnet positioned on the housing or (2) by means of the pushbuttons on the module. In the following operations, pushbuttons will correspond to magnet positions as follows:

  S1 position = S1 button only
  S2 position = S2 button only
  X position = S1 and S2 simultaneously

During normal operation, LED1 will light either RED or GREEN based on the settings of the switch.

RS80 Magnet Position Label

SPECIFIC GRAVITY
S1 X & 2 sec. S2
> 0.5   > 0.8

FAIL SAFE   ALARM
S1 & 6 sec.   S2 & 6 sec.
RELEASE ON   RELEASE ON
GREEN RED   GREEN RED
LOW LEVEL SWITCH   HIGH LEVEL SWITCH   LOW ALARM   HIGH ALARM

RS85 Magnet Position Label

SETPOINT   X & 2 sec.
(S1)   (S2)
WHILE DRY   WHILE WET

FAIL SAFE   ALARM
S1 & 6 sec.   S2 & 6 sec.
RELEASE ON   RELEASE ON
GREEN RED   GREEN RED
LOW LEVEL SWITCH   HIGH LEVEL SWITCH   LOW ALARM   HIGH ALARM

T. DELAY
S1 & 2 sec.   TIME DELAY = n BLINKS (LED1) LED2 OFF
RELEASE S1
CURRENT SETTING LED 1 n BLINKS LED 2 RED   S1

RESET
X + POWER UP & 20 sec.
RESTORE DEFAULTS

Initial Setup Instructions: RS80 and RS85
On Initial installation it is recommended that the RS80, RS85 be calibrated to the application.
- On RS80 Forks, install and power up the unit with no liquid touching the fork. Place a magnet on the X of the label on the housing or press S1 and S2 buttons of the electronics module and hold while a sequence of red and green lights display ending with a single green light. Remove the magnet or release the buttons. The RS80 is now calibrated to the application and factory settings are in place.
- On RS85 units, press S1 and S2 buttons or hold a magnet on X for 2 sec. The LED will go out. Release S2 while holding down S1 for 1 second. The S1 light will turn green. If using a magnet, slide the magnet from X to S1 and hold for 1 second. The light will turn green. RS85 is now calibrated to your application.

3.2 Density - Setpoint Adjustment - High (RS80 only)

The default density setting of the RS80 is High. This means that the switch is set to detect fluids with a specific gravity of 0.8 and above.   The Resonator can be configured to change the default settings externally with a magnet or internally with the pushbuttons inside the enclosure.

To configure the Resonator with a magnet:
1. When the fork is "DRY" or "WET," place a magnet at X position between 1-6 seconds (Figure 1). After this action is performed, both LED1 & LED2 will briefly turn off.
2. Move the magnet to S2. After this action is performed LED 2 will turn green. This will set the High S.G. Setpoint (Figure 2).

Figure 1

Figure 2

To configure the Resonator with pushbuttons:
1. When the fork is "DRY" or "WET," depress buttons S1 & S2 simultaneously for 1-6 seconds (Figure 3). After this action is performed, both LED1 & LED2 will briefly turn off.
2. Depress pushbutton S2. After this action is performed LED 2 will turn green. This will set the High S.G. Setpoint (Figure 4).

Figure 3

Figure 4

The chart below shows the set-up functions (operation column) and corresponding LED actions (LED 1 & LED 2 columns).

Table 1 - For Specific Gravity > 0.8 (High)		
OPERATION	LED 1	LED 2
NORMAL	GREEN OR RED	OFF
X for 1 - 6 Seconds	OFF	OFF
S2	OFF	GREEN
	GREEN or RED	OFF

3.3 Density - Setpoint Adjustment - Low (RS80 only)

The Resonator can be configured to change the default settings externally with a magnet or internally with the pushbuttons inside the enclosure. To set the switch for detecting fluids with a specific gravity of 0.8 and below follow the steps below.

To configure the Resonator with a magnet:
1.   When the fork is "DRY" or "WET," place a magnet at X position between 1-6 seconds (Figure 5). After this action is performed, both LED1 & LED2 will briefly turn off.
2.   Move the magnet to S1. After this action is performed LED 1 will turn green. This will set the Low S.G. Setpoint (Figure 6).

Figure 5

Figure 6

To configure the Resonator with pushbuttons:
1.   When the fork is "DRY" or "WET," depress buttons S1 & S2 simultaneously for 1-6 seconds (Figure 7). After this action is performed, both LED1 & LED2 will briefly turn off.
2.   Depress pushbutton S1. After this action is performed LED 1 will turn green. This will set the Low S.G. Setpoint (Figure 8).

Figure 7

Figure 8

The chart below shows the set-up functions (operation column) and corresponding LED actions (LED 1 & LED 2 columns).

Table 2 - For Specific Gravity > 0.5 (Low)		
OPERATION	**LED 1**	**LED 2**
Normal	GREEN OR RED	OFF
X for 1 - 6 Seconds	OFF	OFF
S1	GREEN	OFF
	GREEN or RED	OFF

3.4 Fail Safe / Relay Operation (RS80 and RS85)

A fail safe relay operation is used to let the user know that the switch has power. This means the relays will be energized when the level is below the switch (dry fork) and de-energized when the level is above the switch (wet fork). Likewise, setting the Fail Safe to Low will cause the relays to be energized when the level is above the switch (wet fork) and de-energize when the level is below switch (dry fork). The default setting for the Fail Safe or Relay Operation of the Resonator will be High. To select the Fail Safe operation for the relays, place the magnet in the S1 position for 6 seconds. Should power be lost, the relay will de-energize.

The following sequence of lights will be observed:

Table 3 - Fail Safe / Relay Operation		
Fail Safe	**Relay State (LED)**	
	Dry Fork	**Wet Fork**
Low Level Switch (Fail Safe Low)	OFF (Red)	ON (Green)
High Level Switch (Fail Safe High) Default Setting	ON (Green)	OFF (Red)

Removing the magnet when LED1 is green will set the Fail Safe to Low. Removing the magnet when LED1 is red will set the Fail Safe to High.

3.5 Fault Mode

If a fault is detected, either electrical or mechanical, LED 2 will blink in RED and the normal ON relay is de-energized. This LED is integral to the modular electronics and can only be seen through the glass viewing cover. On Loop Powered Switches, a fault will result in an output of 4 or 20 ma (User selectable) (See 5.4).

RS80/RS85
Vibrating Fork Level Switch

4.0 Troubleshooting

4.1 Troubleshooting

Fault	Reason	Remedy
Does not switch	No Power	Check power
	Faulty signal line	Check signal line
	Faulty electronic Module	Replace Module
	Density of liquid too low	Set density to > 0.5 at electronic insert
	Fork encrusted	Clean fork
	Fork corroded	Exchange fork and process connection
	Contacts welded together (after short-circuit)	Replace Module; put fuse in contact circuit
Switches incorrectly	Min- / Max– fail-safe mode set wrong	Set correct mode at electronic insert
Sporadic faulty switching	Thick heavy foam, very turbulent conditions, foaming liquid	Mount Resonator Switch in a bypass line
	Extreme RFI	Use shielded cable
	Extreme vibration	Decouple, damp, turn fork 90°
	Water in housing	Screw cover and cable gland tight
	Output overloaded	Reduce load: (Cable) capacitance

5.0 APPENDIX A - (RS85 Only)

5.1 Density Adjustment - Precise Density Setpoint Adjustment (RS85 only)
While the RS80 (base model) should be able to handle 80% of all liquid level applications, there are cases when the process requires more flexibility due to extreme buildup, turbulence, high viscosity or sticky process products. These applications require the use of the RS85 (multi-options).

Precise Density Setpoint - The Resonator RS85 shows higher resistance to build-up than competitors' switches because the RS85 allows for precise density setpoint adjustment. This adjustment is also helpful when dealing with changes in process density.

Dry Adjustment:
When the fork is "DRY," place the calibration magnet on the "X" position for more than 1 but less than 6 seconds (See Figure 9). When both LED's turn off, move the magnet to the "S1" position for 2 seconds, then remove (See Figure 10). The RS85 will then return to normal operating mode with the new set point. If using the internal push buttons, follow Figures 11 and 12. This procedure defines a dry condition for the electronics.

Table 5 - Setpoint Adjustment While Dry		
OPERATION	**LED 1**	**LED 2**
Normal	GREEN OR RED	OFF
X for over 6 seconds	OFF	OFF
S1	GREEN	OFF
	GREEN or RED	OFF

Figure 9

Figure 10

Figure 11

Figure 12

5.1 Density Adjustment - Precise Density Setpoint Adjustment (RS85 only) (cont'd)
Wet Adjustment:
When the fork is "WET" in the process, place the calibration magnet on the "X" position for more than 1 but less than 6 seconds (See Figure 13). When both LED's turn off, move the magnet to the "S2" position for 2 seconds, then remove. The RS85 will then return to normal operating mode with the new set point (See Figure 14). If using push button, follow figures 15 and 16. This procedure defines a wet condition and corresponding density of the process.

Table 6 - Setpoint Adjustment While Wet		
OPERATION	LED 1	LED 2
Normal	GREEN OR RED	OFF
X for over 6 seconds	OFF	OFF
S2	OFF	GREEN
	GREEN or RED	OFF

Figure 13

Figure 14

Figure 15

Figure 16

5.2 Time Delay (RS85 only)

The RS85 Time Delay option allows changing the time response of the output relay, which is very useful in applications with severe turbulence or agitation.

In typical applications, the RS85 with its default settings will activate the relays instantaneously when the switch point has been reached. In certain applications it may be necessary to delay the action of the relays in the switch. If this is desired, a Time Delay for the relays can be set. To enter the Time Delay Setup Mode, place the magnet on "S1" for more than 1 second but less than 6 seconds. The following sequence of LED's will be observed:

Table 7 - Time Delay Adjustment		
OPERATION	LED 1	LED 2
Normal	GREEN OR RED	OFF
S1 for 1 - 6 Seconds	OFF	OFF
Displaying Current Time Delay	"GREEN"	RED
	OFF	OFF
S1 PER Table 6	"GREEN"	OFF
"_" - indicates a blinking LED		

Table 8 - Time Delay Setting								
LED1 Blinks	1	2	3	4	5	6	7	8
Seconds	0	5	10	15	20	25	30	35

While LED2 is lit *RED*, LED1 will blink the current Time Delay setting per Table 6.

After LED2 turns "off", LED1 will blink in correspondence to the different Time Delay settings per Table 4. When the desired Time Delay is reached, place the magnet on the "S1" position (See Figure 17). The Time Delay will be set and the RS85 will return to normal operation. If a time delay is not selected, the RS85 will return to its current operating mode without changing the current Time Delay setting. During normal operation of the switch, if a Time Delay is selected other than 0 seconds, LED1 will change color when the switch point has been reached (See Figure 18). The relays will respond after the elapsed Time Delay on both energized and de-energized actions.

Figure 17

Figure 18

5.3 Factory Default Settings / Reset

Each RS80/85 will be supplied with the following factory default settings:

Fail Safe Mode = High
Loop Powered Alarm = High (20 mA) - *Consult factory for Loop Powered Availability.*
Time Delay = Instant
Setpoints = Factory Defaults

To restore the default settings, place the magnet on the "X" position (or hold the S1 & S2 pushbuttons) for 30 seconds. The following sequence of lights will be observed:

TABLE 9		
OPERATION	**LED 1**	**LED 2**
Normal	GREEN or RED	OFF
X = 30 SECONDS	OFF	OFF
	GREEN	RED
	RED	GREEN
	GREEN	RED
	RED	GREEN
	GREEN	RED
	GREEN	OFF
	GREEN	OFF
Remove the magnet		

The RS80/85 will be restored to normal operation with the default settings. The Resonance Frequency at the moment the magnet is removed will become the dry setpoint. (See Figure 19 and 20)

Figure 19

Figure 20

5.4 Loop Powered Alarm (RS85 only)
Consult factory for Loop Powered Availability.
The default setting for the Loop Powered Alarm will be High (20mA). This means that the Resonator RS85 alarm default will send a 20 mA signal output in the event of a fault detection. To change the high (20mA) to Low (4mA) output, push S2 for more than 6 seconds until LED2 flashes between green (low) and red (high) alarm output settings (See Figure 21 and 22). Releasing the pushbutton when LED2 is red will set loop powered alarm at 20 mA. Releasing the pushbutton when LED2 is green will set loop power alarm at 4 mA.

Table 10 - Loop Powered Alarm		
OPERATION	LED 1	LED 2
Normal	GREEN OR RED	OFF
S2 for more than 6 seconds	OFF	OFF
Remove the magnet	OFF	GREEN = LOW RED = HIGH

Figure 21


Figure 22

6.0 APPENDIX B

6.1 FM Approval on 120VAC or 240VAC Installations

In order to comply with Factory Mutual explosion proof requirements, when using stranded wires and 120 VAC or 240 VAC, the crimped pin terminals provided must be used for all electrical connections inside of the housing. Install crimp pin terminals to the end of stranded type wires using a crimpling tool before installing wires in terminal block.
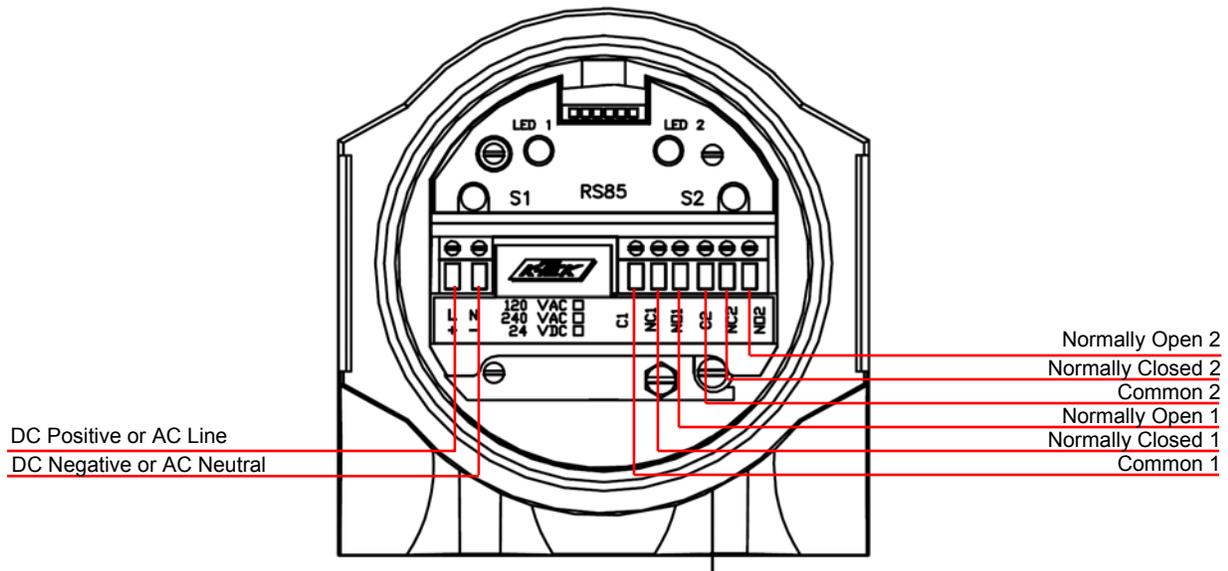
7.0 Remote Assembly

Table 1	
Remote Cable	
Tx	Red Wire
GND	Black Wire
Rx	Yellow Wire
Tsensor	Green Wire
Sheild	Bare Wire

Table 2	
Sensor	
Tx	Red Wire
GND	Black Wire
Rx	Yellow Wire (26AWG)
Tsensor	Green Wire (22 AWG)

Table 2

Table 1
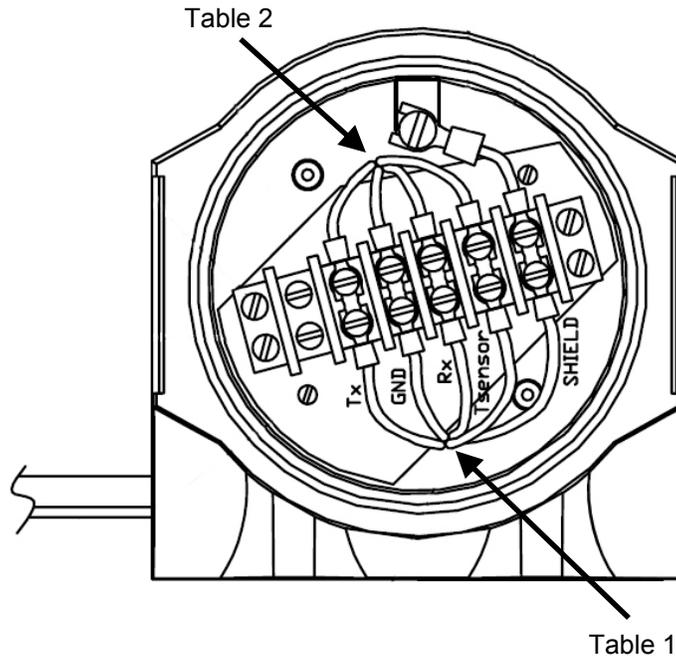
Probe Enclosure Terminal Wiring

Remote Housing Terminal Wiring

8.0 WARRANTY STATEMENT

5 YEAR WARRANTY FOR:
KM26 Magnetic Liquid Level Gauges; MagWave Dual Chamber System; LS Series Mechanical Level Switches (LS500, LS550, LS600, LS700, LS800 & LS900); EC External Chambers, STW Stilling Wells and ST95 Seal Pots.

3 YEAR WARRANTY FOR:
KCAP300 & KCAP400 capacitance switches. BETA Pressure and Temperature Switches have a limited factory guarantee, excluding wetted parts & consumables.

2 YEAR WARRANTY FOR:
AT100, AT100S and AT200 series transmitters; RS80 and RS85 liquid vibrating fork switches; RLT100 and RLT200 reed switch level transmitters; TX, TS, TQ, IX and IM thermal dispersion switches; IR10 and PP10 External Relays; MT2000, MT5000, MT5100 and MT5200 radar level transmitters; RI100 Repeat Indicators; KP paddle switches; A02, A75 & A77 RF capacitance level switches and A38 RF capacitance level transmitters; Buoyancy Level Switches (MS50, MS10, MS8D & MS8F); Magnetic Level Switches (MS30, MS40, MS41, PS35 & PS45).

1 YEAR WARRANTY FOR:
KM50 gauging device; AT500 and AT600 series transmitters; LaserMeter and SureShot series laser transmitters; LPM200 digital indicator; DPM100 digital indicators; APM100 analog indicators; KVIEW series digital indicators and controllers; SF50 and SF60 vibrating fork switches, KB Electro-Mechanical Continuous Measuring Devices, KSONIK ultrasonic level switches, transmitters & transducers, ChuteMaster Microwave Transmitter / Receiver and TiltMaster Switches.

SPECIAL WARRANTY CONSIDERATIONS:
K-TEK does not honor OEM warranties for items not manufactured by K-TEK (i.e. Palm Pilots). These claims should be handled directly with the OEM.

K-TEK will repair or replace, at K-TEK's election, defective items which are returned to K-TEK by the original purchaser within the period specified above from the shipment date of the item and which is found, upon examination by K-TEK, to its satisfaction, to contain defects in materials or workmanship which arose only under normal use and service and which were not the result of either alterations, misuse, abuse, improper or inadequate adjustments, applications or servicing of the product. K-TEK's warranty does not include onsite repair or services. Field service rates can be supplied on request.

If a product is believed to be defective, the original purchaser shall notify K-TEK and request a Returned Material Authorization before returning the material to K-TEK, with transportation prepaid by the purchaser. (To expedite all returns/repairs from outside of the United States, consult K-TEK's customer service team (service@ktekcorp.com) to determine an optimal solution for shipping method and turnaround time.) The product, with repaired or replaced parts, shall be returned to the purchaser at any point in the world with transportation prepaid by K-TEK for best-way transportation only. K-TEK is not responsible for expedited shipping charges. If the product is shipped to K-TEK freight collect, then it will be returned to the customer freight collect.

If inspection by K-TEK does not disclose any defects in material or workmanship, K-TEK's normal charges for repair and shipment shall apply (minimum 250.00 USD).

The materials of construction for all K-TEK products are clearly specified and it is the responsibility of the purchaser to determine the compatibility of the materials for the application.

THE FOREGOING WARRANTY IS K-TEK'S SOLE WARRANTY AND ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED AND NEGATED TO THE MAXIMUM EXTENT PERMITTED BY LAW. NO PERSON OR REPRESENTATIVE IS AUTHORIZED TO EXTEND ANY OTHER WARRANTY OR CREATE FOR K-TEK ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF K-TEK'S PRODUCTS. THE REMEDIES SET FORTH IN THIS WARRANTY ARE EXCLUSIVE OF ALL OTHER REMEDIES AGAINST K-TEK. K-TEK SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR SPECIAL DAMAGES OF ANY KIND. K-TEK'S SOLE OBLIGATION SHALL BE TO REPAIR OR REPLACE PARTS (FOUND TO BE DEFECTIVE IN MATERIALS OR WORKMANSHIP) WHICH ARE RETURNED BY THE PURCHASER TO K-TEK.

9.0   Customer Support

K-TEK Corp. (USA, Canada, International)

18321 Swamp Road
Prairieville, LA 70769 USA
Tel: (1) 225.673.6100
Fax: (1) 225.673.2525
Email: service@ktekcorp.com
Website: ktekcorp.com

9.1   K-TEK RMA FORM

K-TEK
18321 Swamp Road
Prairieville, LA 70769
Phone: +1 (225) 673-6100
Fax: +1 (225) 673-2525
Email: service@ktekcorp.com
Toll Free: (800) 735-5835

*** IMPORTANT CUSTOMER NOTICE: PLEASE READ PRIOR TO RETURNING PRODUCTS TO K-TEK***

Be sure to include the Return Authorization (RA) number on the shipping label or package to the attention: Customer Service. A copy of this document should also be included with the packing list. K-TEK wants to maintain a safe work environment for its employees. In the event, the returned product or material has been in contact with a potentially hazardous chemical, per federal regulations, the customer must provide evidence of decontamination and the related chemical composition and characteristics. In order to expedite your return, please include the applicable Material Safety Data Sheets (MSDS) and decontamination tags by affixing these documents in close proximity to the shipment label for identification purposes. (January 18, 2006)

Return Authorization Form	
Customer:	Date:
Contact Name:	Product:
Contact Email:	Serial No:
Contact Phone:	Job No:
Contact Fax:	Service Rep:

Completed by Customer
Reason
Problem Found: None
Action: None
Requested:
Is expedited return shipping requested?   ☐Yes
If yes, please provide a purchase order or your shipper's account number (ex. FedEx or UPS). K-TEK pays return transport via standard ground shipments only.
If purchase order is issued, a copy of purchase order must be included with return documentation.
Is K-TEK authorized to repair items determined to be non-warranty?   ☐Yes
If yes, a copy of purchase order must be included with return documentation.   Account #:
Customer PO: Date:
Has product been in contact with any potentially hazardous chemical?   ☐Yes
If yes, documentation product and forward MSDS to K-TEK, "ATTN: Customer Service"

Return Repaired Product to Address
Shipping Address: Billing Address:
Ship Via:

For the latest version of this manual, visit ktekcorp.com.